LIVESTOCK EXHIBITS

of the

UNITED STATES DEPARTMENT OF AGRICULTURE

at the

TWENTY-SEVENTH

INTERNATIONAL LIVE STOCK EXPOSITION

Chicago, Illinois

November 27 to December 4,

1926.

FOREWORD

Since the earliest times, visual instruction has been utilized to convey the latest thought in art and science. During recent years, exhibits have been a popular means of appeal in the field of Agriculture.

For the sixth successive year the United States Department of Agriculture is presenting a livestock exhibit at the International Live Stock Exposition.

As on previous occasions, the Department has endeavored to point the way to more intelligent methods of livestock production. The data presented and the practices recommended are based on practical experiments conducted by the Department and various State agencies, in many instances in collaboration with livestock farmers.

This pamphlet has been prepared to enable those who view the exhibit, to possess a permanent record of the information which it contains.

Representatives of the Department accompanying the exhibit are ready to explain to visitors various lines of the Department's work and to discuss livestock problems generally.

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OUR MEAT SUPPLY

The story of the journey of America's meat supply from farm and ranch to the consumer's table is told in several illustrated chapters in this exhibit. The story begins by showing herds of cattle and flocks of sheep on western ranges where, on cheap lands and forage, the first step is taken towards the manufacture of one of the Nation's greatest assets, -- our meat supply. Hogs are shown in a Corn-Belt setting grazing on alfalfa. Following the movement of the fattened stock to market it is shown that a total of 47 cattle, 29 sheep, and 130 hogs are sent to market every time the clock ticks off a minute. The scene in the exhibit in which this is illustrated is made more realistic by showing miniature stock cars, moving past a replica of the Chicago Stock Yards.

The interesting journey through a model packing plant is illustrated with an actual working model of a packing plant, about 50 feet long, in which the more important operations are taking place, with miniature Government inspectors stamping tiny swine and beef carcasses after inspection.

A butcher's shop, with two brightly-lighted show windows filled with choice cuts of beef, lamb, and pork further emphasizes the famous little purple stamp and its meaning. A legend points out that, "Meat bearing the Federal inspection marks is the only food carrying the assurance of the United States Government, through immediate supervision, that it was prepared under strictly sanitary conditions from animals good for food."

Right in line with the recent attention which is being given throughout the country to the study of the factors influencing quality in meats, a large size copy is shown of the new poster entitled, "Do You Know GOOD BEEF?" This poster, which illustrates in natural colors a choice and a common round of beef, urges those who can afford it to demand quality in beef as they do in the other things they buy, thus creating a demand which should more nearly compensate the stockman for his extra pains in producing and feeding out quality beef. Provision is made for the visitor to the exhibit to write his name and address on a card to receive a copy of this beef poster if he has not already had one.

Another feature emphasizes the two general methods to be used in the cooking of meats. Meat from young animals which have been well treated in the feed lot, particularly hind-quarter cuts should be cooked rapidly with an intense dry heat; whereas less tender cuts such as fore-quarter beef and meat from older animals should be prepared by long, slow cooking with moisture. The latter method of cooking does not give satisfactory results with tender meats because it robs them of their natural juiciness and flavor.

An electrically illuminated image of a beef steer is used in another feature to illustrate the names, location and proportions of the whole carcass, of the various wholesale cuts of beef. Another electrical exhibit lists the different foods required for a balanced diet showing the relative importance of meat as well as other animal products, fruits, cereals, vegetables and sweets, and the functions performed by each.

The Department has a number of publications on the subject of meats which are sent free as long as the supply lasts to those who have use for them. Among them are -

Miscellaneous Circular 63 "The Inspection Stamp as a Guide to Wholesome Meat."

Department Bulletin 1246 "Market Classes and Grades of Dressed Beef."

Department Bulletin 1317 "Retail Marketing of Meats."

Department Circular 300 "Commercial Cuts of Meat."

Farmers' Bulletin 1415 "Beef, Slaughtering, Cutting, Curing."

Farmers' Bulletin 1186 "Killing and Curing Pork."

Farmers' Bulletin 1172 "Slaughtering and Use of Lamb and Mutton."

A NEW METHOD OF BEEF PRODUCTION

The high lights of a study of the possibilities of various methods of handling and fattenning beef calves are given in this section of the exhibit. The experiment is one conducted at Sni-a-Bar Farms, Grain Valley, Mo., by the Bureau of Animal Industry and the University of Missouri.

Three lots of well-bred, native spring calves averaging 53 days old were handled as follows, beginning May 30, 1925: One lot ran on pasture with their dams until October 16 when they were divided into two lots and grain feeding to one lot was begun. A second lot was fed grain in a creep while following their mothers on a blue grass pasture. A third lot was fed a similar grain ration but separated from their mothers and allowed to nurse twice daily. After weaning, each lot of calves was full fed in dry lots.

The calves which had grain for about a month before weaning weighed 50 pounds more and were valued at 50¢ per 100 pounds more at weaning than the calves which had no grain. Creep-feeding on pasture proved the most satisfactory method of the three.

This system of beef production makes use of three excellent feeds, namely, pasture, grain and milk for pushing beef calves to make quality beef carcasses at about 8 to 10 months of age. It takes advantage of the well-known ability of young animals to make the most efficient use of feeds.

The System in Brief

Neither poor quality cattle nor slipshod methods of feeding and management may be expected to meet with success in such a system of beef production where the highest-paid demands of the market are to be met. Following are six outstanding features of the system:

1 - Use prolific beef-type cows of good milking quality.
2 - Use purebred beef-type bulls of outstanding merit.
3 - Provide ample winter feed and good summer pasturage for the breeding herd.
4 - Breed for early spring calves of uniform age.
5 - As soon as calves are old enough to eat grain provide a good mixture in a creep in pasture.
6 - Fully utilize milk, grain and pasture to bring calves to highest market condition at 8 to 10 months of age.

Experimental Data

A tabulation showing initial and final weights, feed consumed and costs, both on pasture and during the feeding period in dry lot, for the 12 calves which showed the best returns in this experiment is given below:

AN APPLICATION OF THIS METHOD ON A CORN BELT FARM - 1925

12 calves were placed on pasture with their dams, when 53 days old; kept there 174 days, then weaned and finished in dry lot for 84 days

P E R I O D ON P A S T U R E

(Nursing Dams and Fed Grain in Creep)

Average initial weight	193 pounds
" final "	589 "
Gain on pasture	396 pounds
Grain consumed in creep per head:	
Corn	4.6 bushels
Oats	3.5 "
Linseed meal	31 pounds
Cost of feed per head	$7.09

P E R I O D IN D R Y L O T

Average initial weight	589 pounds
" final "	757 "
Gain in dry lot	168 pounds
Feed consumed per 100 pounds gain:	
Shelled corn	493 pounds
Linseed meal	62 "
Alfalfa hay	165 "
Cost of feed per head	$13.36

THE KITCHENETTE STEAK

That the tender, juicy, small-sized steaks and roasts from a carcass such as produced in the method outlined above, fit right in with the modern tendency to small families, "two-by-four" apartment kitchenettes, and the substitution of mechanical contrivances for what used to be considered honest work and daily exercise, is forcefully illustrated in another feature. A bobbed-haired housewife is shown in her sixth-floor kitchenette preparing a meal for two, in which the small, minute steak is an appropriate companion for the quarter-pound stick of butter, the dainty salad and the frail dessert which she is about to serve. By way of contrast, a painted picture of grandma's kitchen as it looked about fifteen minutes before the men folks came in from doing the chores, is portrayed. The steak in the latter scene would nearly cover the kitchen table in the former, and the length of the sticks of stove-wood in the wood-box give a mighty good idea of the depth of grandma's oven.

While the quarter-pound of butter, the two pound bag of flour, the tiny size of canned goods and the super-quality minute steak may not be based on sound economy, nevertheless they are facts which must be faced by the modern producer of agricultural products and the distributors of same. This exhibit asks the livestock man whether he is ignoring this modern demand for more and more meats done up in small packages of quality, or whether he is adjusting his production practices to meet this demand.

OUR FRIEND THE HORSE

A feature of this exhibit is the Department's new horse film entitled "The Horse and Man" shown in miniature size with a continuous motion picture outfit. This film delves into history and shows how the horse has been the constant ally of man in agriculture, commerce, war, and play.

Another portion of this exhibit goes into the horse and mule situation in some detail showing the figures taken from the agricultural census of 1925 and other information gathered by the Department. A casual study of these data shows that a surprising proportion of the country's work stock is of advanced age and that there are insufficient replacements coming on in the form of young stock. It would require more than 27 years to produce the present number of horses and mules on farms at the alarmingly slow rate of increase shown by these figures. Since the average life of a horse or mule is about 15 years, it is evident that the production rate must be nearly doubled to maintain present numbers. The situation will be serious by the year 1930 unless production is speeded up.

One mid-western State which made a survey of of its horse situation through the county agents of 39 of its counties learned that 59% of its horses were past 12 years old and more than 1/3 of them past 15 years old. A farm study in the same State showed that only 20% of the horses were under 7 years of age which is the time in a horse's life when he has reached his best working ability and at which depreciation sets in. A report of this

State's survey points out significantly that if their situation is typical of the farm work stock situation throughout the nation that greatly reduced efficiency in farm power and higher costs of crop production are just around the corner.

A table lists the various States with the present horse population of each, the 1924 foals, the number of foals which should have been born in each State to maintain the present horse population, as well as the percentage of increase necessary to maintain present numbers. This record shows that there are but 5 States of the 48, and they are all western States with relatively small horse populations, in which a normal rate of increase in work stock is going on. Some States apparently must increase the rate of production of young stock some 8 or 10 times to do their share towards avoiding the impending shortage.

CORN

The importance of the corn crop in livestock production is here set forth. Do you know that

89 per cent of our corn is fed to livestock and only 11 per cent is required for net exports and human food?

Corn is by far the most important grain feed of livestock. In 1919 it was estimated that over 58 million tons of corn were fed to livestock as grain. Besides the grain fed there were over 30 million tons of corn stover and fodder and 29 million tons of corn silage consumed by our farm animals. This feed produced by corn was sufficient, theoretically, to support 27,608,000 animal units for one year, which means that

25 per cent of the entire sustenance of our livestock is supplied by our corn crop.

The attention of the observer is attracted by the figures of a hog, a cow, and a sheep, the principal farm animals, each one of which is covered by grass, corn, and other harvested feeds in the proper proportion to indicate the part that pasture, corn and other harvested feeds play in the growth and development of the animals.

Our forage resources and the contribution each makes to livestock production are summarized in Separate 895 from the 1923 Yearbook of the Department of Agriculture which may be obtained at the Information Booth.

THE RELATION OF CORN TO HOG PRODUCTION

A change in the price of corn is ultimately reflected in the price of hogs.

The Corn-Hog Ratio is an indicator of the probable future trend in the use of corn as a feed for hogs.

Bushels of Corn equal in value to 100 lbs. of Hogs at farm prices.

In	1910	100	lbs.	Hogs	equaled	13.3	bushels	corn
"	1915	"	"	"	"	9.2	"	"
"	1920	"	"	"	"	9.8	"	"
"	1921	"	"	"	"	14.0	"	"
"	1922	"	"	"	"	14.4	"	"
"	1923	"	"	"	"	9.0	"	"
"	1924	"	"	"	"	8.2	"	"
"	1925	"	"	"	"	11.3	"	"
"	1926	"	"	"	"	(?)	"	"

When more than the average (11.4) number of bushels of corn are required to equal the value of 100 lbs. of hogs more corn is fed to hogs and hog production increases.

When less than the average (11.4) number of bushels of corn are required to equal the value of 100 lbs. of hogs fewer hogs are fed and hog production declines.

KNOW THE NEW SEED-STAINING LAW.

It enables you to recognize imported red clover and alfalfa seed.

Seed of alfalfa or red clover from any foreign country or region which the Secretary of Agriculture has decided is not adapted for general agricultural use in the United States will not be allowed entry unless at least 10 per cent of the seed is stained red; that from Canada, which is well adapted to our conditions especially in the Northern States, will have 1 per cent of the seed stained violet; and that from all other foreign countries 1 per cent stained green.

Small containers equipped with magnifying glasses and open sacks with larger quantities of both red clover and alfalfa seed will show the seed as it is now being stained with the three colors. At present the red stain is applied only to red clover seed from Italy and alfalfa seed from Turkestan and Africa.

Service and Regulatory Announcement Bureau of Plant Industry No. 9 issued July, 1926, explains the law. Get a copy from the Information Booth.

CLOVER AND ALFALFA MAINTAIN THE FERTILITY OF YOUR FARM LANDS.

20 per cent of your farm should be growing clover, alfalfa or some other legume.

In a soil fertility experiment at the Kansas Experiment Station, Manhattan, Kansas, they have in progress a 16-year rotation. Alfalfa is grown for four years, followed by two years of corn and one year of wheat alternating for a period of 12 years. The yield of corn in 1923 from land in this rotation which had been in alfalfa from 1910 to 1913, inclusive, was 53.6 bushels per acre, while land which had been continuously cropped to corn since 1910 produced only 19.2 bushels to the acre. Land in a three-year rotation consisting of two years of corn and one year of wheat produced practically the same yield as the land which had been in corn continuously.

The effect on corn yields in Virginia of a clover crop plowed under is strikingly illustrated by the results obtained with crimson clover. In one field where this clover has been seeded in the corn at the last working each year and plowed under in the spring for five successive years, the yield has increased from 12 to 50 bushels per acre.

INCREASE YOUR SUCCESS WITH RED CLOVER AND ALFALFA BY SOWING ONLY ADAPTED SEED.

Red clover grown from seed produced in southern Europe is not winter hardy in our Northern States.

Two enlarged photos show side by side the condition of plots of red clover at the Minnesota Experiment Station after passing through one winter. In the one sown with Italian seed very few plants lived over winter, while the one sown with Minnesota seed maintained an excellent stand of vigorous plants.

In the clover region from the middle of Ohio southward the disease clover anthracnose kills your clover. Sow only locally adapted seed.

The exhibit displays an enlarged photograph taken in May, 1923, at the Arlington Experiment Farm near Washington, D. C. of three plots of red clover. All three plots had an equally good stand of clover in July, 1922. The plot in the center sown with the Tennessee resistant strain has an excellent stand of clover, while the plot on the left sown with Italian seed and that on the right sown with Bohemian seed were killed out almost entirely by the clover anthracnose.

The results of these and many other tests of seed from foreign countries are explained in a mimeograph circular which can be obtained at the Information Booth.

Turkestan alfalfa fails almost invariably when sown in the humid part of the United States.

A simple table outlines the results obtained in Michigan and Virginia with Turkestan alfalfa as compared with Grimm and Kansas common. The first year the yields are fairly good from Turkestan, but the second year the average yield of Turkestan is approximately one fourth that of the other strains.

South African alfalfa is not winter hardy in our Northern States.

Enlarged photos show side by side plots at the Iowa Experiment Station, Ames, Iowa, the second year after seeding. The one sown with seed from Africa killed out almost completely while that sown with seed of Grimm maintained an almost perfect stand.

THE CONSUMER DETERMINES THE GRADES OF LIVESTOCK

The value of an animal produced for meat is determined by the price the consumer is willing to pay for the meat from that animal. When a consumer buys meat of his butcher, he asks for a quality of meat which he likes, at a price which he is willing to pay. It is not merely a matter of quality, nor a matter of price. He wants the best he can get for the money he can spend. The result is that there are consumers who will pay a high price for choice and prime grades; while there are others to whom economy is the primary consideration, who desire low priced cuts, yet as wholesome as can be had.

The amount of each grade of meat which the retailer can sell to his consumers, determines his purchases from the packer; if he has a trade which calls for a large amount of high grade meat, he buys this from a wholesale meat distributor; if his trade calls for inexpensive meat, he will buy of the lower grades in larger quantities. These prices are in turn reflected back to the packer and to the buyer of livestock on the hoof, and result in establishing the various price ranges between grades, which the producer receives. In other words, it is the price that the consumer is willing to pay which determines the price the animal will bring when sold at the farm.

The exhibit shows these relationships in three scenes on a rotating stage, illustrating three grades of meat in the retail shop in wholesale cuts and in the live animal. The range of prices varies from time to time, so that actual prices cannot be given except from day to day. The consumer's best sources of information regard-

ing the grades of beef is contained in Department Bulletin 1246, "Grades of Dressed Beef". Similar circulars are in preparation for pork, mutton, veal and lamb.

THE LIVESTOCK OUTLOOK
HOGS

There are several factors involved in the relation of supply and demand, which operate to bring about changes in the price level for hogs. These include supply of hogs; price of corn; domestic purchasing power, indicated by the activity of wage earners; the general price level; the foreign demand for pork products, and the price of other products which may be substituted for pork.

The outlook and the prospective price of hogs, can be determined most accurately by considering the present trends of each of these factors, and how they are likely to effect the price of hogs in the future. For instance, the semi-annual pig surveys, giving numbers of prospective farrowings, show what the supply of hogs is likely to be 6 to 12 months later. Estimates of the corn crop indicate whether corn will be abundant or scarce. The outlook on industrial conditions indicates the general trend of the price level and purchasing power of consumers, and studies of foreign conditions indicate the probable foreign demand. Hog producers need to study the indications of these various factors closely, if they wish to plan their operations in accordance with probable demand.

The exhibit shows the average price of heavy hogs at Chicago during a period of twenty years and indicates at each point on the curve some of the principal factors that caused the price to rise or fall. This curve is merely a suggestion, on a long time basis, of how hog producers may study conditions looking to the future.

The outlook on the hog situation is prepared twice a year by the Bureau of Agricultural Economics of the U. S. Department of Agriculture. The annual outlook is prepared in February and summarizes all of the factors so far as known. A mid-summer outlook is prepared in July, following the June Pig Survey, which indicates the trend of hog production for the next six months. Copies of these and other outlook reports may be had upon request from the attendants at this exhibit.

HOW BEEF IS GRADED

The separation of livestock into grades begins at the farm. Herds consist of animals of various qualities, ranging from well-bred and well-fed stock, which produces meat of the highest quality, down through many variations to scrub stock, poorly finished, which produces meat of low quality.

As the animals are sold from the farms and ranges and moved to the large livestock markets, the first grading process consists of a separation into various grades, for which different prices are paid, according to their true value, which is their value as producers of meat, or as animals to be used as feeders to be further finished. When the animals arrive in the stockyards, the separation into lots of various qualities begins, and here the market grades and classes may be clearly seen. The animals are bought by the packers, according to their quality and finish.

When the animals are slaughtered and the carcasses are carried on into the coolers, the grades of meat begin to apply, and the carcasses are again grouped according to a grading system. Here the various grades are separated and sent on to the distributing meat houses according to the demand for different grades. At this point the meat grader of the U. S. Department of Agriculture may come into the picture, where his services are requested. The carcasses are marked by the grader according to the official grades for dressed carcasses.

The meat now goes on to the retailer. Each meat retailer selects from the coolers the grade of meat which suits his trade, and which he can

handle most profitably.

The exhibit portrays the movement of livestock from the farm to the consumer, showing how the grades are used at each step on the road to market. The successful use of grades involves a knowledge of them by producers, traders, packers, retailers and consumers, in order that differences in price, resulting from differences in quality of meat, may be properly reflected through the trade to all groups concerned.

The various grades of livestock and of dressed meats are presented in detail in the following Department publications:-

Dept. Bul. 1246 - "Market Classes and Grades of Dressed Beef"
" " 1360 - "Market Classes and Grades of Livestock"
" Circular 300 - "Commercial Cuts of Meat"

Service and Regulatory Announcement No. 98 - "Rules and Regulations Governing the Investigation and Certification of Class, Quality (Grade), and Condition of Meats and Meat Food Products"
Service and Regulatory Announcement No. 99 - "Official United States Standards for Grades of Carcass Beef"

Mimeographed documents - "Market Classes and Grades of Feeder & Stocker Cattle" - "Slaughter Cattle" - "Lamb, Yearling and Mutton" - "Slaughter Lambs and Ewes" - "Vealers and Slaughter Calves".- "Specifications for the Purchase of Fresh and Frozen Beef" - "Fresh and Frozen Lamb, Yearling and Mutton Carcasses" - "Pork Carcasses and Cuts and Miscellaneous Meats", and "Suggested Market Classes and Grades of Dressed Beef".

4 colored charts on beef, veal, lamb and pork, showing location and yields of standard commercial cuts.

CONTROLLING LIVESTOCK ENEMIES

This exhibit is built in semblance of a one-room, western, log cabin with the front cut away so as to form a demonstration booth. Through the open back door one sees a wintry landscape just at sunrise. A lone wandering coyote has stopped mementarily to look into the lighted cabin.

On the left wall is hung a large picture showing the proper method of putting out traps for wolves and coyotes. On the shelf below the picture are the ingredients used in mixing poisoned bait. Other pictures and texts give information relating to the destruction of livestock enemies by various well-tested methods.

When the organized work against predatory animals was started in 1915, the large gray wolves were regarded by cattlemen and other experienced observers as the wild animal by far the most destructive to livestock. The development of the livestock business throughout the West afforded them an abundance of readily obtainable food among the calves, yearlings, adult cattle, sheep, swine and other domestic animals. Despite enormous sums paid in bounties on predatory animals and the great but unorganized efforts of ranchmen and their employees and of professional trappers, wolves maintained themselves in large numbers and exacted a heavy toll from the livestock industry. In some districts they rendered impossible the growing of sheep and hogs. Economic pressure due to restricted ranges, and the necessity for closer attention to every item that reduced the margin of profit finally made intolerable this drain upon the possible output of livestock. As a result of the organized campaigns that have been conducted, gray wolves have been largely eliminated from the pasture ranges of the West.

At present coyotes are unquestionably the most destructive predatory animal in this country. They constitute one of the most difficult problems of predatory animal control. They are widely distributed and well endowed to protect themselves and secure food under a great variety of conditions. To insure their perpetuation they are prolific breeders, sometimes having as many as fourteen young in the litter. Contrary to their former habits, coyotes may now be found in high and rugged mountain ranges and in dense forests. They persistnetly follow livestock in their seasonal movements between summer and winter ranges, constantly feeding upon the young and often adult cattle, sheep, goats and swine. Because of their fox-like skill in concealing themselves and in escaping pursuit, they often successfully locate their dens and rear their young in close proximity to ranches.

It has long been recognized by the Biological Survey that the only hope of coping successfully with coyotes, is through the development of effective poisoning procedure and its application on a wide scale throughout their range. With this in view, constant effort has been made to devise poisoning materials that would prove acceptable and not arouse the suspicion of these alert animals and to develop means of distributing poisoned baits which would permit the infested areas to be covered systematically. So successful has this proved that over great areas of range the destruction of coyotes has been so thorough that stockmen have been able to reduce the number of men required to handle their flocks and to carry their flocks through the lambing period with little or no losses from coyotes in localities where previously they were heavy.

In addition to the direct saving of lambs, growing stock and breeding animals, stockmen are

thus enabled to handle their herds at less expense and to utilize the pasture more fully. Freedom of the range from predatory animals eliminates the need for long drives to bedding grounds and permits the use of the open herding system which is beneficial both to the sheep and to the range.

For further information apply to the Biological Survey, U. S. Department of Agriculture, Washington, D. C., or its local Leaders of Predatory Animal Control and cooperating organizations. Secure yearbook Separate 845 - Hunting Down Stock Killers.

REDUCE LIVESTOCK LOSSES

This exhibit is made up of a modeled foreground and a painted background representing a mountainous section in the West where large bands of sheep are grazed.

The main flock of sheep may be seen in the background and in the foreground is seen a sheep that has wandered away from the flock only to be killed by a lurking bobcat. The two animals have been prepared by a skilled taxidermist and arranged so as to present a very lifelike appearance.

A large sign hanging on the front of the booth gives some rather startling figures relating to the value of sheep and all livestock killed by predatory animals yearly and suggests methods of killing these predatory animals.

Losses of livestock from ravages of predatory animals are among the most spectacular and exasperating of those suffered by the stockmen. Disease may decimate his flocks and herds, or drought or wintry storms may result in the starvation or death of numbers of valuable animals. None of these disasters, however, arouses such resentment and determination to settle the score as arises in the heart of the ranchman when wolves or other predatory animals enter corrals or operate on the open range maiming and killing his cattle or other domestic stock. The average destruction by these animals is estimated to be for each wolf and mountain lion about $1000 worth of stock annually, each coyote and bob-cat $50.00 worth, and each stock-killing bear $500 worth. Statistics may leave the stockman unmoved and uninterested but a vivid, lasting impression is made when he finds one of his own valuable steers pulled down and throttled by a wolf, one of his colts struck down by a mountain lion, the scattered carcasses of several of his

sheep killed by a coyote or bobcat for sheer lust of killing, or a valuable cow with skull crushed by a blow from the powerful paw of a grizzly.

Since the beginning the hand of the stockman has been raised against predatory animals and every known means at his disposal, guards, guns, traps, poisons, bounties and enclosures, have been employed to secure the protection of his flocks or his herds from their depredations. During the past ten years, individual efforts have been supplemented by organized campaigns against predatory animals in which the work of Federal, State and local agencies has been correlated and the work carefully planned and systematically directed by experienced men who are closely in touch with the stockmen and who make a careful study of predatory animals. This is a direct and practical means of reducing livestock losses. As a result of the extended and carefully planned campaigns against predatory animals, losses of livestock from this source, originally estimated at more than $20,000,000 a year, have been reduced to a point where great numbers of stockmen now experience no losses whatever from their depredations, conditions have been very materially improved through the greater part of the range country, and steady, consistent progress is being made in eliminating this source of livestock losses. This work is conducted in cooperation between the Biological Survey, State departments, the Extension Service and stockmen's associations.

For further information apply to the Biological Survey, U.S.Department of Agriculture, Washington, D. C. or its local Leaders of Predatory Animal Control and cooperating State Organizations. Secure yearbook Separate 845 - Hunting Down Stock Killers.

RANGE SHEEP

Seven stages in the economical production of wool and lambs in the western range States are shown by series of illustrations in natural colors and with instructive legends in this section of the exhibit.

Fall Range

Here is illustrated a breeding flock on a section of the range which is too dry for summer grazing but which furnishes excellent fall pasturage.

Some of the points emphasized here are: Ewes need good grazing during breeding season for largest lamb yields - Use purebred rams, well fed and robust - Sheep thrive best when they have water at least once a day - Insure good spring grazing by not overgrazing the fall range.

Winter Range

A mountainous scene with snow-capped peaks in the background illustrates this chapter, showing that for winter grazing the sheep are run on lower elevations with protection from storms and heavy snows.

A wise sheepman will - Insure adequate forage by using this range only during winter - Save feed by winter grazing but trail to feeding grounds before snowbound on range - Watch bad storm forecasts.

Winter Feeding Grounds

Irrigated valleys where alfalfa is grown

are the ideal locations for feeding the sheep in winter.

Here it is important to - Feed hay two or three times a day - Keep ewes gaining but avoid waste - Feed grain beginning a month before lambing.

Spring Range and Lambing Grounds

For this season of the year the same grounds are used by many sheepmen as for the fall range.

Emphasis is made in this section of the exhibit upon the following points in sheep husbandry: Let palatable forage get a good start before grazing - Reserve a specific area of luscious forage for lambing - Lack of feed may cause excessive losses of both ewes and lambs - Ewes nursing young lambs need water every day - Protect lambs in cold stormy weather - Give each ewe and lamb special attention if necessary.

Shearing Time

A sheep-shearing scene in a shed at the foothills is here depicted. The wool grower is urged to keep market demands in mind when packing his wool in order to secure the premium which the market always pays for attractive offerings.

Wool has been known to bring $5.00 per sack more

WHEN (BLACK WOOL, (TAGS, (BUCK WOOL, (DEAD WOOL are each in separate sacks.

AND the MAIN GRADES are attractively packed, flesh side out and shoulder showing, tied with paper twine and the brands are from paint that scours.

Occasion is taken in this section of the feature to show the official wool standards of the United States. These standards are based upon one grading factor only -- that of the diameter of the wool fiber.

Summer Range in the National Forests where shade and lush forage are found.

Outstanding items in good sheep husbandry at this period are: Produce fat lambs and a large quantity of clean wool and protect timber reproduction and water sheds by - Proper stocking of the range - Bedding sheep on new ground every night - Herding openly and quietly - Holding the sheep off some area each year until the forage is mature.

Ready for Market

A flock of well-finished, uniform quality lambs is shown here leaving a forest range for shipment to market. No sheepman can well afford to practice good production methods and ignore market demands.

Some high points for guidance when considering this all-important phase of range sheep production are as follows: Market the lambs when as nearly finished as the range will produce - Make them attractive to the buyer by sorting into uniform groups - Get the maximum price by selling on grade or according to merit - Market cull ewes and those not producing lambs.